

REMARKS

Claims 1-28 are currently pending and under examination. Claims 16, 25, and 27 have been amended to correct an obvious typographical error and thus clarify the subject matter which applicants regard as the invention. No new matter has been added to the application. Applicants respectfully request consideration of the following Remarks and entry of same into the record of the present application.

The Office Action has rejected claims 1-28 under 35 U.S.C. § 103(a), as allegedly being obvious over U.S. Patent No. 6,580,224 to Ishii et al. (hereinafter "Ishii") in view of U.S. Patent Publication No. 2003/0020101 to Bogner et al. (hereinafter "Bogner") and "Development and Luminescent Characteristics of CaSiN₂ Based Phosphors," Journal of the Institute of Electronic Engineering of Korea, Oct. 1999 by Lee et al. (hereinafter "Lee"). Applicants respectfully disagree for the following reasons.

As an initial matter, neither Ishii nor Bogner nor Lee, alone or in combination, would have rendered the claimed invention obvious. None of the cited documents disclose the combination of a blue and/or blue-green emitting electroluminescent phosphor and a europium-activated alkaline earth silicon nitride phosphor as disclosed in the present application, and there is no motivation or suggestion to combine the documents so as to arrive at the claimed invention.

Ishii is directed to a liquid crystal display wherein a backlight comprises a blue green or blue emitting copper activated zinc sulfide phosphor and red emitting fluorescent pigment. The red emitting fluorescent pigment disclosed in Ishii is a rhodamine group fluorescent pigment which is a fluorone dye. As detailed on Column 8, lines 8-17, Ishii describes the red fluorescent pigment as inferior in luminous efficiency to the copper activated zinc sulfide phosphor. Further discussion is directed to the positioning and distribution of the red emitting fluorescent pigment within a liquid crystal display device structure so as to achieve a desired brightness. Ishii does not disclose or suggest the use of a red emitting phosphor. Moreover, Ishii does not disclose or suggest a blend of phosphor materials to achieve a white emission.

Bogner is directed to light emitting diodes (LEDs) and phosphors for use with LEDs. LEDs are solid state devices which do not use the electroluminescent phosphors found in electroluminescent lamps. Instead, LEDs use a doped p-n junction that can emit light upon

application of a low voltage, direct current. Bogner uses a photoluminescent rare-earth activated silicon nitride phosphor to convert a portion of the light emitted by the LED to another color. A photoluminescent phosphor is stimulated to emit light through the absorption of photons. The phosphor of Bogner can absorb blue photons emitted by the LED and emit a long wavelength yellow-red photon. There is no teaching or suggestion in Bogner that it would be desirable to use a blend of an electroluminescent phosphor and the photoluminescent phosphor. In fact, such a combination would be detrimental to the LED of Bogner since blending an electroluminescent phosphor with the photoluminescent phosphor would reduce the light output from the LED because the electroluminescent phosphor would not be stimulated to emit light by the blue photons emitted by the LED.

The abstract of Lee discloses a $\text{CaSiN}_2\text{:Eu}$ phosphor. Lee fails to disclose a blue and/or blue-green emitting electroluminescent phosphor or a blend of such a blue and/or blue-green electroluminescent phosphor and a red emitting europium activated alkaline earth silicon nitride phosphor.

None of the Ishii, Bogner, or Lee teaches or suggests a phosphor blend comprising a blue and/or blue-green emitting electroluminescent phosphor and a red emitting europium activated alkaline earth silicon nitride phosphor. Moreover, none of the documents teach or suggest a blend of phosphor materials that would provide a white emission. Specifically, there is no suggestion to motivate one of skill in the art to modify the teaching of Ishii to replace the rhodamine group fluorescent pigment with a red emitting europium activated alkaline earth silicon nitride phosphor, or to create any blend of phosphor materials that would provide a white emission. Similarly, there is no suggestion to motivate one of skill in the art to modify the teaching of Bogner to replace the LED with a blue and/or blue-green emitting electroluminescent phosphor and corresponding electric field source to stimulate such an electroluminescent phosphor. Similarly, there is no suggestion to motivate one of skill in the art to modify Lee by creating a phosphor blend with a blue and/or blue-green emitting electroluminescent phosphor. Thus, this rejection should be withdrawn.

CONCLUSION

In view of the foregoing Remarks, Applicants respectfully submit that the rejections set forth in the August 5, 2008, Office Action have been overcome and claims 1-28 are in condition for allowance. Applicants earnestly seek notification of same.

A credit card payment submitted via EFS Web authorizing payment in the amount of \$1,110.00 is enclosed for the Extension of Time under 37 C.F.R. § 1.17(a)(3). This amount is believed to be correct; however, the Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 14-0629.

Respectfully submitted,

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/Kevin W. Hathcock/

Kevin W. Hathcock

February 5, 2009

Date